

REMARKS

The amendments to the claims will be discussed below. New claims 19 to 23 are based on former claims 1 to 4.

Information Disclosure Statement

In the Office Action, the Examiner noted that a listing of references in the specification is not a proper information disclosure statement and referred to a supplementary information disclosure statement. The Applicants filed a first information disclosure statement on January 24, 2000. The Applicants received a return card acknowledging receipt of this first information disclosure statement on January 27, 2000. The first filed information disclosure statement lists the references referred to in the specification and others. A copy is enclosed for the convenience of the Examiner. The Applicants will also provide copies of the references if requested.

Double Patenting

The Examiner provisionally rejected claims 1-18 on the basis of double patenting in view of Application No. 09/425,235. As this was a provisional rejection, the Applicants reserve their right to traverse this rejection when claims for '235 or the present Application are allowed.

Claim Rejections - 35 USC § 112

The Examiner objected that the claims do not specify upper and lower limits of both duration and concentration. Amended claims 1 to 4 now specify that the selected concentration and selected duration used in performing a step (b) are selected to maintain an acceptable permeability or to produce a gradual decline in permeability

(supported by the disclosure at page 12, lines 11 to 20 and page 13, lines 2-4). The Applicants submit that, in conjunction with the defined CT ranges and the limitation to applying cleaning chemical at least once a week, the claims are not indefinite.

New claims 19 to 23 are based on former claims 1 to 4 and specify upper and lower limits of both duration and concentration as supported by the disclosure at page 13, lines 5 to 21 and page 12, line 26 to page 13, line 2.

The Examiner objected that the word “cleaning event” is unclear. This word has been removed from the claims.

The Examiner objected that the terms “rich” and “lean” are unclear in their context, namely the phrase “water rich in solids” and the clause “to permeate a water lean in solids”. These have been replaced by the phrase, “water containing solids” (from part (a) and the wherein clause of former claim 18)
and the clause, “to produce a filtered permeate” (supported by page 5, line 11).

The Examiner objected to the recitation “is wasted” in claim 18. The Applicants submit that this term is known in the art to mean sent to a drain or otherwise removed from the process without becoming part of the product. Further, page 11 line 25 to 27 states that the purpose of wasting the permeate collected before agitation resumes is to reduce the amount of cleaning chemical entering the permeate tank 37. This makes it clear that “is wasted” means that the permeate is removed but does not become part of the product.

Claim Rejections - 35 USC § 102

The Examiner rejected claim 18 as being anticipated by AAPA. Claim 18 (as amended) states that agitation is stopped before flowing the chemical cleaner, that agitation resumes after permeation resumes and that permeate collected before agitation is

resumed is wasted or recycled. None of these features are described in AAPA and, accordingly, the Applicants submit that claim 18 is not anticipated. The amendments are supported by page 11, line 15 to page 12, line 1 of the specification.

Claim Rejections - 35 USC § 103

The Examiner rejected claims 1-4 as being obvious in view of AAPA because the claimed invention is a routine optimization of the process in AAPA. The Applicants submit that AAPA is directed at recovery cleaning whereas amended claims 1-4 (and new claims 19-23) are directed at maintenance cleaning. Maintenance cleaning is not an optimization of recovery cleaning but a new process directed at lengthening the time between recovery cleanings.

In particular, amended claims 1 to 4 and new claims 19 to 23 specify a process performed at least once a week that merely maintains an acceptable permeability or gradual decline in permeability over extended periods of time (supported by the disclosure at page 9, lines 1-3; page 12, lines 11-20; and page 13, lines 2-4). The claimed weekly CT ranges further indicate that permeability will be maintained or experience a controlled decline.

In contrast, the description of AAPA states that recovery cleaning is not instituted until permeability of the membranes becomes unacceptable (page 2, lines 22-25) and that permeability of the membranes after a cleaning step is substantially restored (page 3, lines 13-14). The Applicants submit that a person seeking to optimize processes to substantially restore the permeability of membranes with unacceptable permeability would not be led to the Applicants' invention because the Applicants' invention does not work for that purpose.

The Examiner rejected claims 5-17 as being unpatentable over AAPA in view of the Class 210, subclass 412 definition. The Examiner states that claim 5 differs from AAPA only in the recitation of "pulsing" which is described in the Class 210, subclass 412 definition.

The difference between the Applicants' regime of maintenance cleaning and AAPA has been discussed above. In addition, the Applicants' claimed "pulsing" is different from pulsing as it is in the Class 210, subclass 412 definition as will be discussed below.

The Applicants respectfully submit that the "pulsing" in the Class 210, subclass 412 definition is directed at enhancing the physical effect of a backwash on solids fouling a membrane. The Class 210 subclass 412 definition refers to a backwash liquid supplied in a "pressure wave" such as provided by a reciprocating piston or a pulsator. Neither the form of the pressure wave, its duration nor its function are stated. Further, the backwash liquid is not stated to be a cleaning chemical. Rather, the backwash liquid is stated to be "usually filtrate", however, which suggests that the backwashing referred to is intended to physically remove contaminants from the membranes. Thus the pulsing in the Class 210 subclass 412 definition is of a type which would create a pressure wave, is likely rapid, and is intended to physically dislodge contaminants.

In contrast, the liquid in the Applicants' pulsing is specifically a chemical cleaner. The pulses are in the form of periods in which permeate passes through the membranes to provide chemical cleaner at an initial efficacy separated by waiting periods during which chemical cleaner decreases in efficacy but remains substantially effective. Claim 11 states that the pulses last for between 10 seconds and 100 seconds and the waiting periods last for between 50 seconds and 6 minutes (supported by page 14, line 28 to page 15, line 14). The Applicants pulses would not create a "pressure wave" or physical effects as in the Class 210 subclass 412 definition. Instead, the Applicants' pulsing permits an efficient use of cleaning chemical as described at page 14, lines 10 to 20 and page 15, lines 15 to 22. The Applicants submit that the use of pulsing to provide efficient

use of cleaning is not suggested or achieved by the Class 210 subclass 412 definition and accordingly a person skilled in the art would not be led to the Applicants' invention by a combination of AAPA and the Class 210 subclass 412 definition.

The Applicants further submit that the dependent claims provide additional inventive features.

In view of the above considerations, the Applicants submit that the claims as amended define subject matter which is patentable over the prior art, and that this application is otherwise in condition for allowance.

Respectfully submitted,

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